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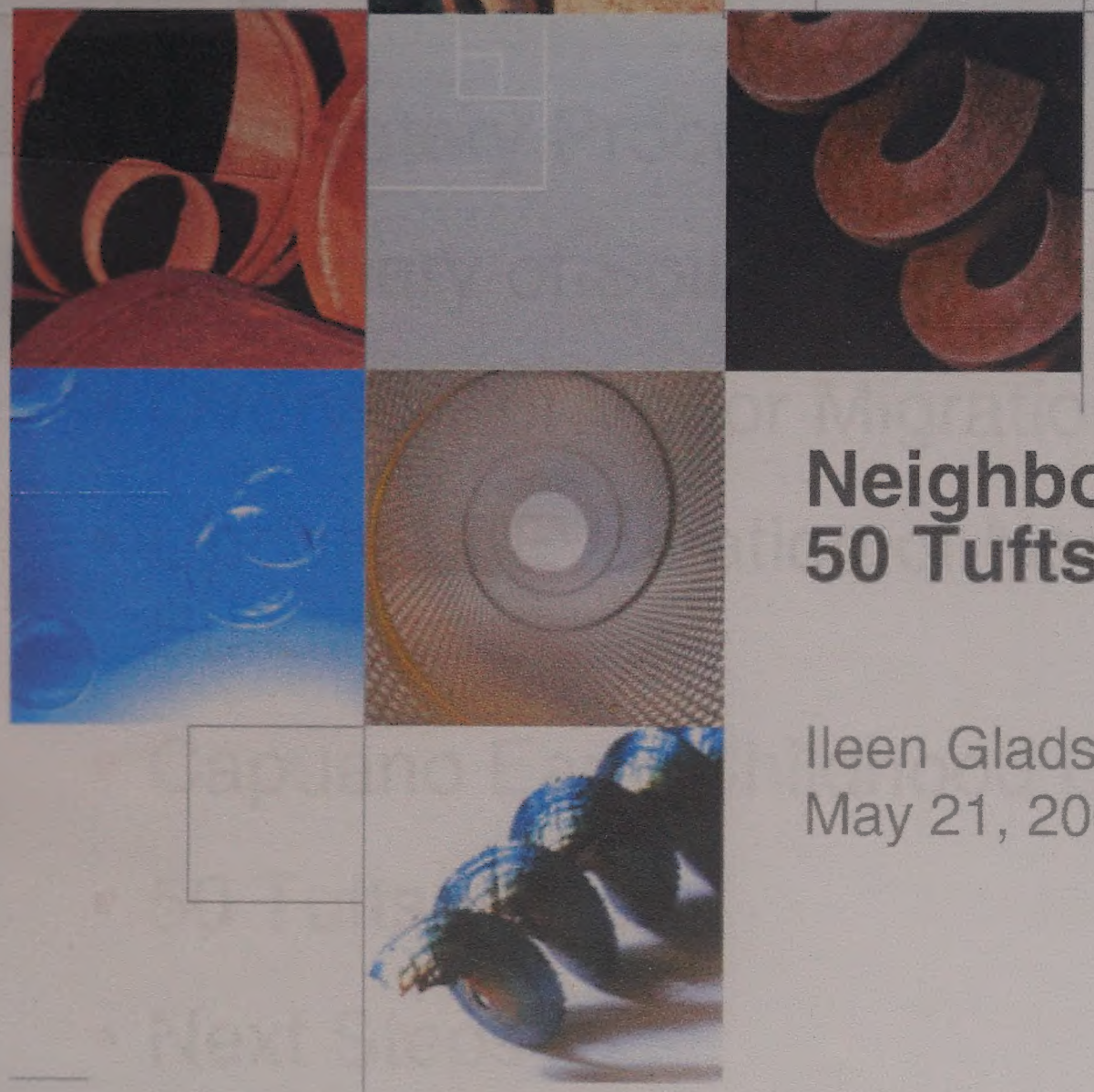

Neighborhood Meeting
50 Tufts Street

Ileen Gladstone, P.E., LSP
May 21, 2007

LOCAL HISTORY
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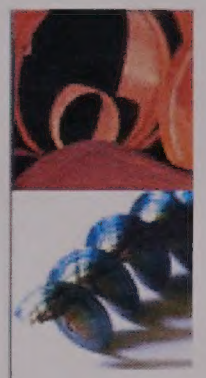
Agenda



- Regulatory Process
- Summary of Soil, Groundwater and Soil Vapor Testing
- Overview of Vapor Migration and Mitigation
- Update of Evaluation of Nearby Residences and Buildings
- Capuano Early Childhood Center
- 50 Tufts Street
- Next Steps

Massachusetts Contingency Plan Process

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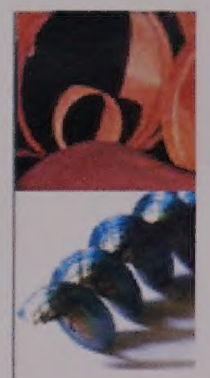
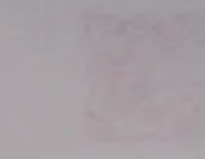
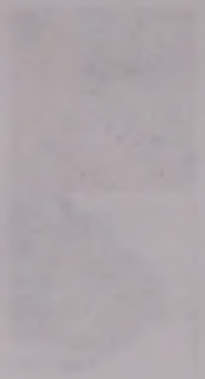


- State statute (Chapter 21E) delegates authority over site investigations and cleanups to DEP
- DEP issued detailed legal and technical regulations called Massachusetts Contingency Plan (MCP)
- DEP established licensing program for environmental scientists and engineers to qualify as Licensed Site Professionals (LSPs)
- An LSP must conduct investigation and certify compliance with MCP to DEP at each step of process
- At this Site DEP is participating in and directly overseeing the investigation and cleanup





Massachusetts Contingency Plan Process

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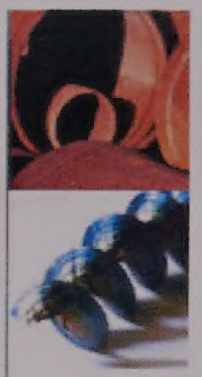
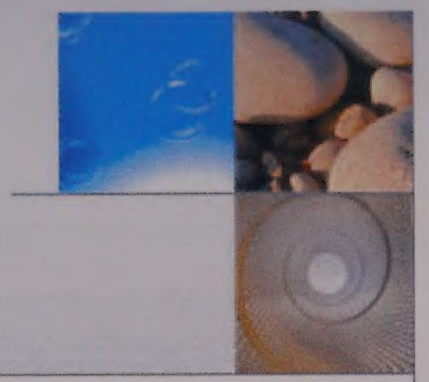


- MCP process moves logically through phases, from initial reporting and investigation of site conditions, to detailed scientific evaluation necessary to determine available and appropriate engineering solutions
- Completed Phase I Investigation and Report
- Conducting Immediate Response Actions (IRAs) to address potential migration of vapor into nearby buildings
- Conducting Phase II activities to determine extent of contamination in groundwater
- UniFirst and the City are holding regular meetings to keep the community informed concerning the progress of the MCP process
- This is another informational meeting concerning a State-run process

Sampling and Testing through April 2007



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- Soil Testing
- Groundwater Testing
- Indoor Air Testing
- Based on the testing above – identified a study area

Sampling and Testing through
April 2007

- Soil Testing
- Groundwater Testing
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- Based on the testing above – identified a study area

Soil Test Results through April 2007

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MAXIMUM PCE IN SOIL

- > 1,000 mg/kg
- 100 - 1,000 mg/kg
- 10 - 100 mg/kg
- 1 - 10 mg/kg
- 0 - 1 mg/kg
- NOT DETECTED (ND)

0.145 MAXIMUM PCE CONCENTRATION (mg/Kg) TO DATE

(0-2) SAMPLE DEPTH (Feet)

Groundwater Test Results through April 2007

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Soil Gas Test Results through April 2007

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Study Area: Residences and Buildings to be Evaluated

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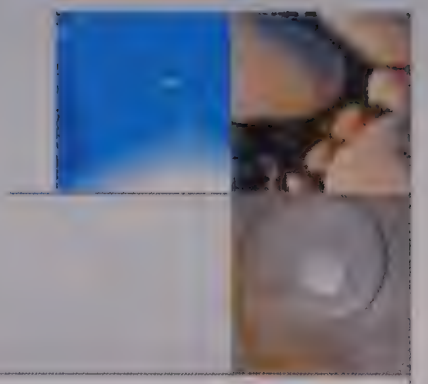
TETRACHLOROETHYLENE (PCE)



- Volatile Organic Compound (VOC) – liquid at room temperature that readily evaporates
- Commonly used in dry-cleaning, auto parts cleaning, and household products
  - carpet cleaner
  - spot remover
  - other cleaning products
- Occurs in indoor air from variety of sources
  - Recently dry-cleaned clothes
  - Storage and use of cleaning products
  - Neighboring commercial uses

Typical Indoor Levels

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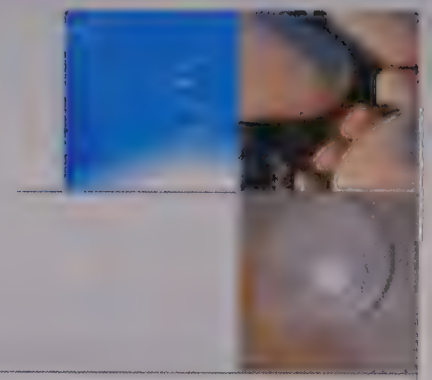
- MassDEP only regulates VOCs in indoor air if they are from soil or groundwater contamination
- MassDEP currently reviewing most recent scientific studies to establish typical levels for VOCs, including PCE
- Historically, dozens of studies have measured PCE in indoor air at wide range of concentrations
- Recent studies: typical concentrations range between 1-30ug/m^3

Health Effects

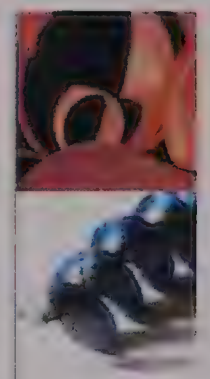
- No Health Outcome Surveys demonstrate effects from PCE (cancer or otherwise) at concentrations measured here in indoor air
- Studies of workers suggest some effects may be associated with continuous, long-term exposures to much higher levels (thousands of ug/m^3)
  - Liver
  - Kidney
  - Nervous system

Health Effects (Continued)



- USEPA is still studying PCE, and has not classified as carcinogen
- National Toxicology Program and World Health Organization
  - Worker Studies – limited evidence
  - Animal Studies – sufficient evidence
  - Conclusion – "potential human carcinogen"
- Again, no Health Outcome Surveys demonstrate effects from PCE (cancer or otherwise) at concentrations measured here

Clean-Up Standards



- For all chemicals, MassDEP requires that levels in indoor air in residences be reduced as low as feasible, regardless of risk
- MassDEP says, if it can be avoided, no amount of any chemicals in residences is desirable
- This policy is much more stringent than in other states, where higher levels are considered acceptable
- UniFirst is committed to complying with MassDEP's requirements

Vapor Migration

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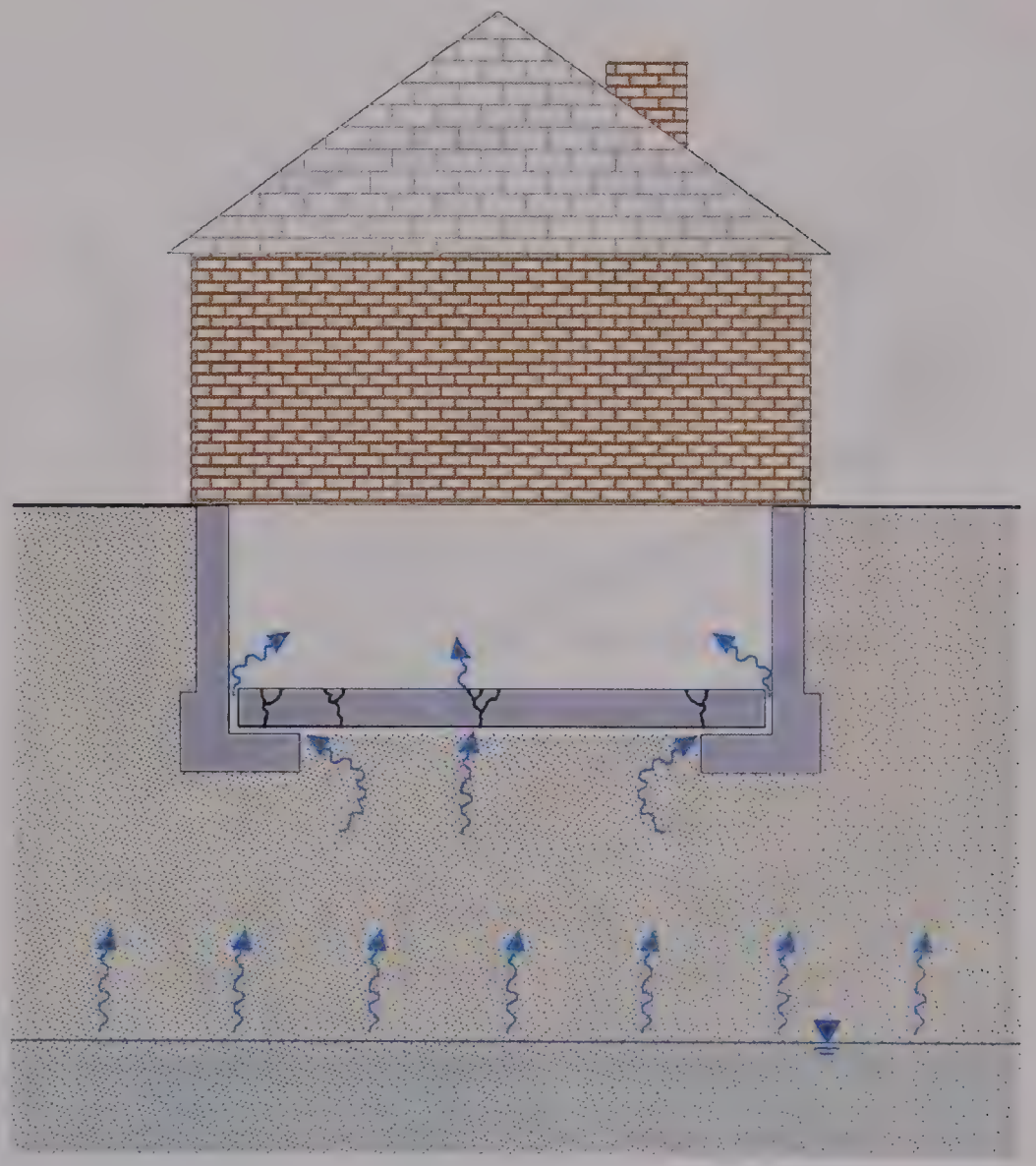
- Volatile Organic Compounds (VOCs) travel underground through air pockets in soil.
- Vapors may migrate into a building through cracks, holes for utilities and other openings in foundations.
- Nearby groundwater and soil gas samples indicate the potential for vapor migration.
- Sub-slab soil gas samples evaluate if vapors are beneath a building.



Sub-Slab Depressurization System

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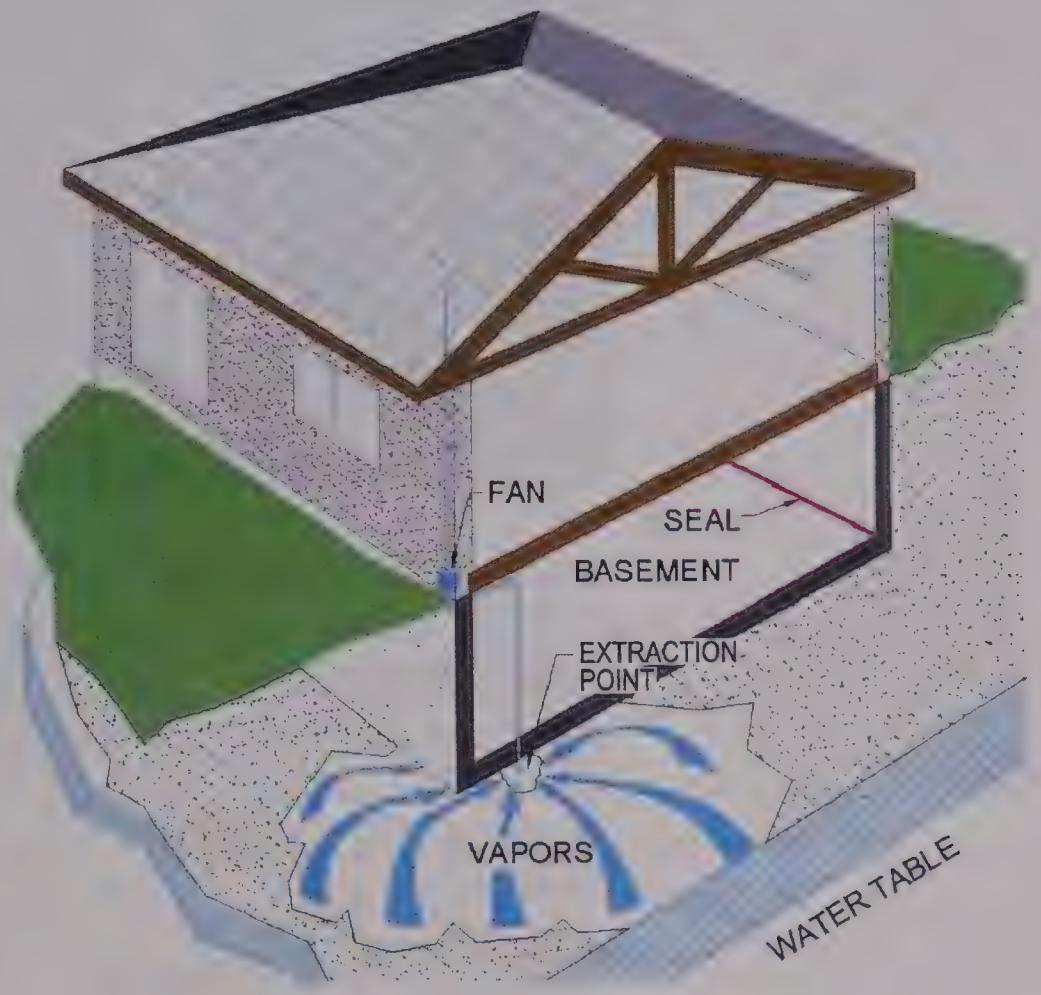
- Similar to Radon Systems
- Prevents vapors from entering a home or building
- Extraction point in the basement floor
- Piping from the basement through an exterior wall and connected to a fan (blower)
- Fan (blower) draws air from beneath the building
- Creates a “negative pressure” that sweeps up vapors and pipes them to the outdoor air, above the roof



Sub-Slab Depressurization System

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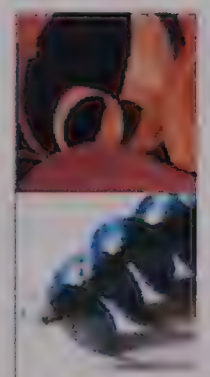

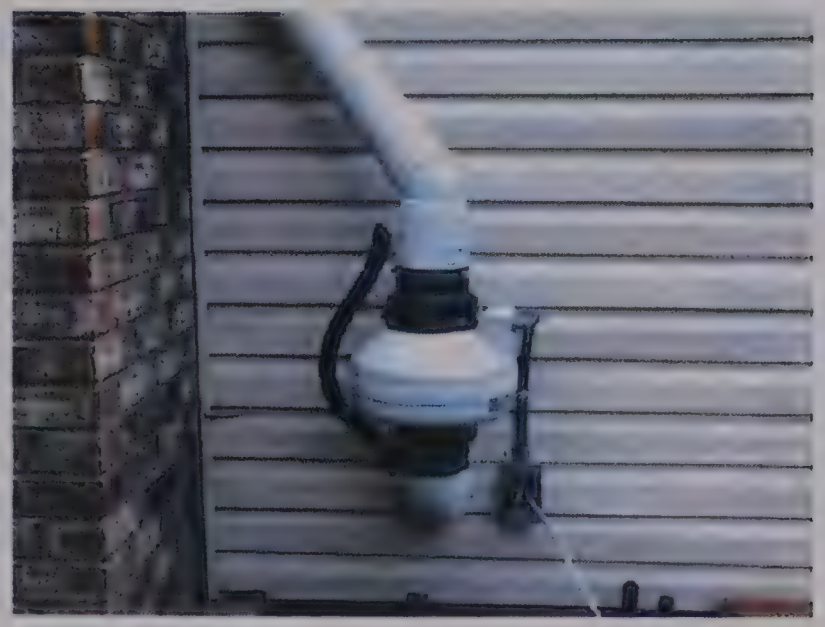

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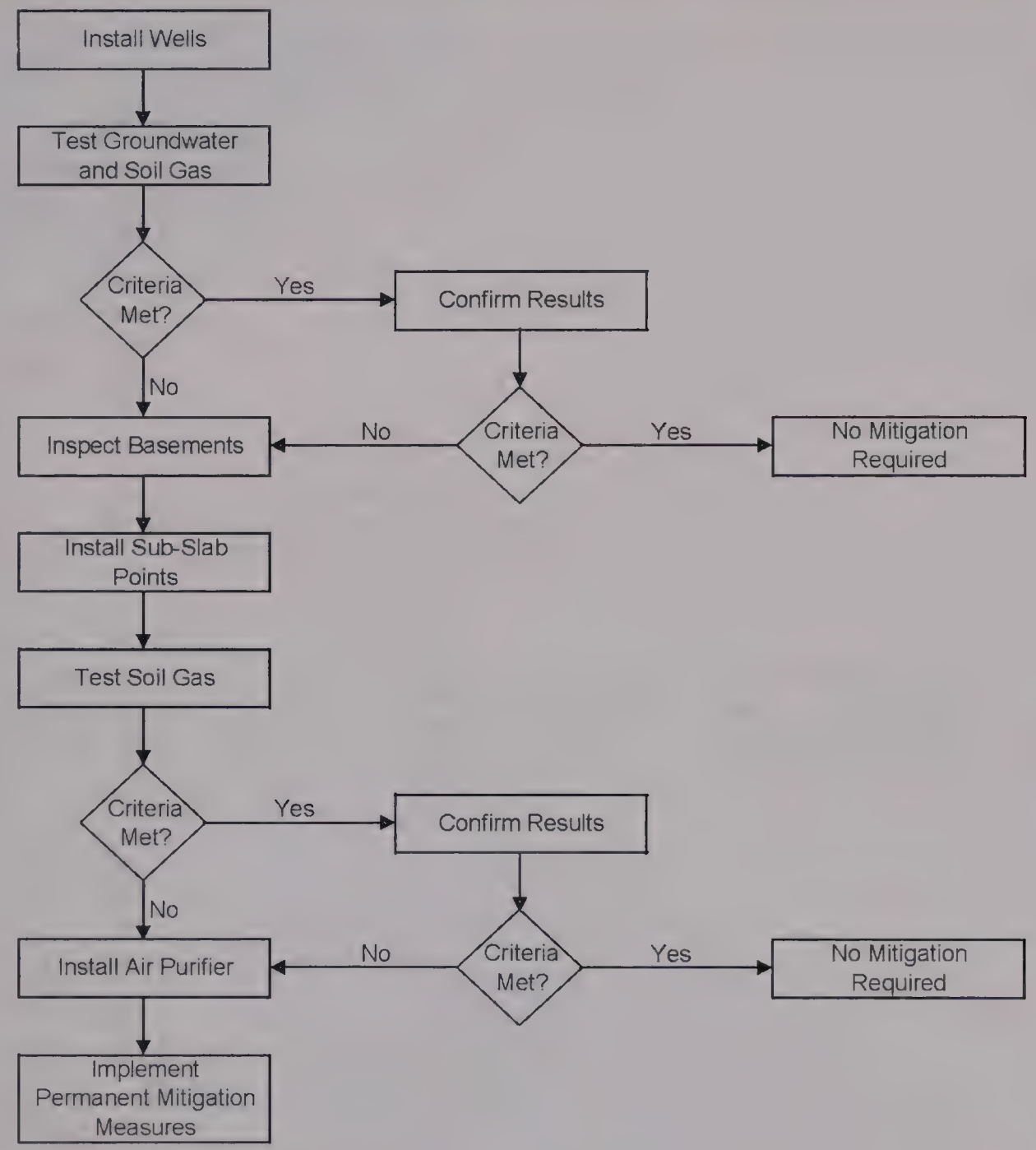
Massachusetts Department of ENVIRONMENTAL PROTECTION

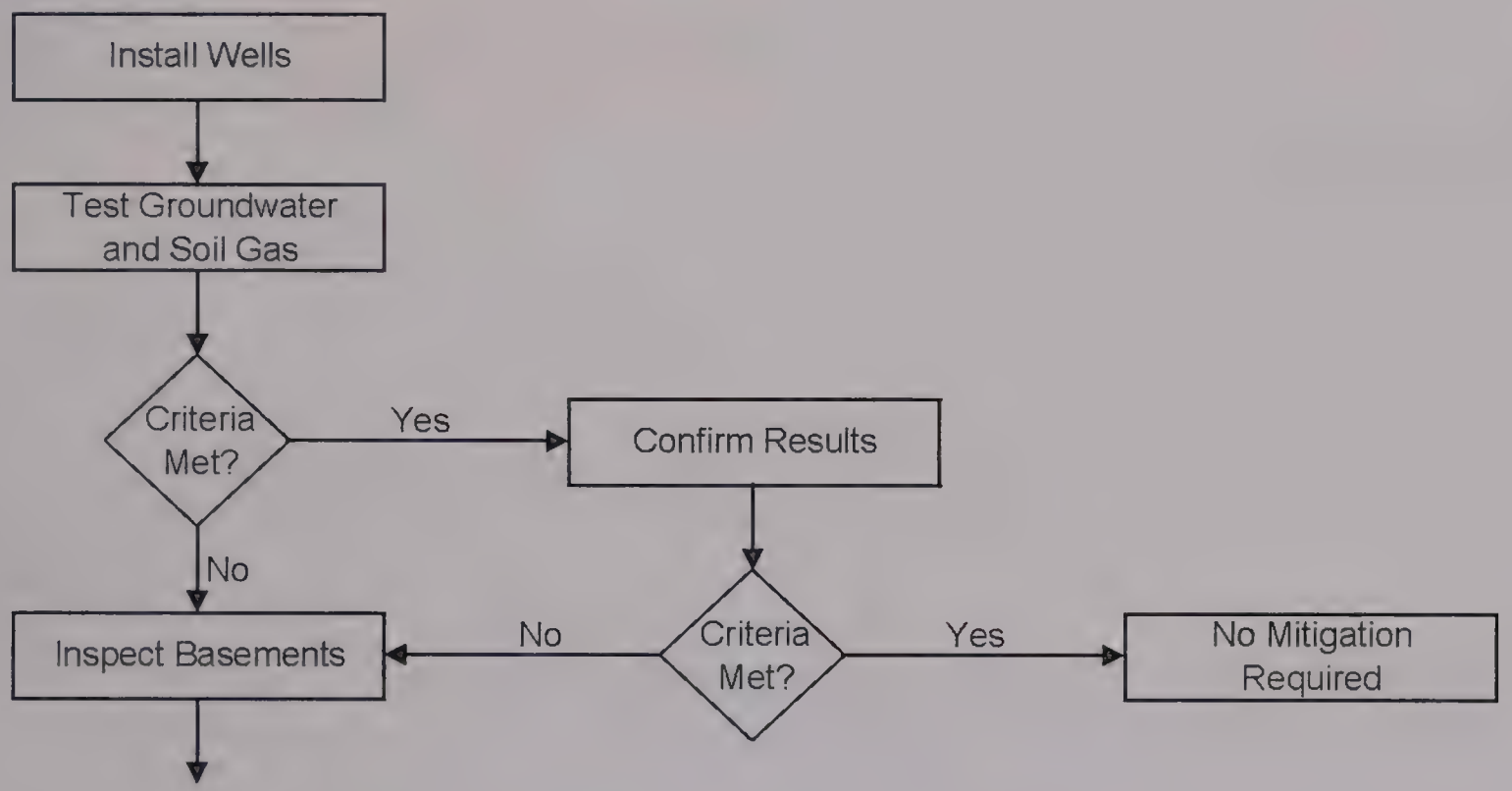
How can you tell if VOCs are from chemicals in my home or from vapor migration from contaminated groundwater?

To determine if vapor intrusion from contaminated groundwater is a concern, samples of the groundwater and soil gas near your home may be taken. Soil gas samples collected beneath the foundation are often the most reliable method to determine if vapors are present under the building and could cause a problem. Indoor and outdoor air samples may also be collected. A comparison of all the data is conducted to determine the source of contamination.

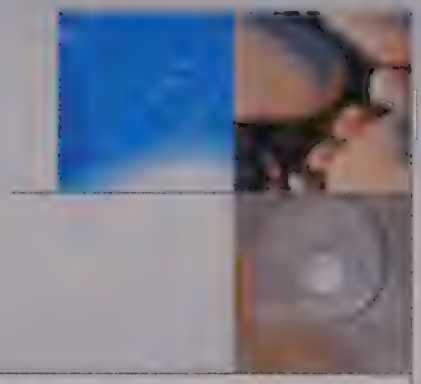
Evaluation Process

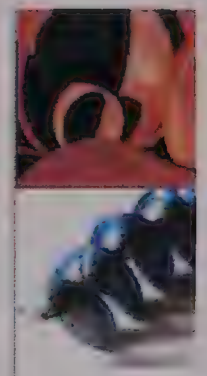


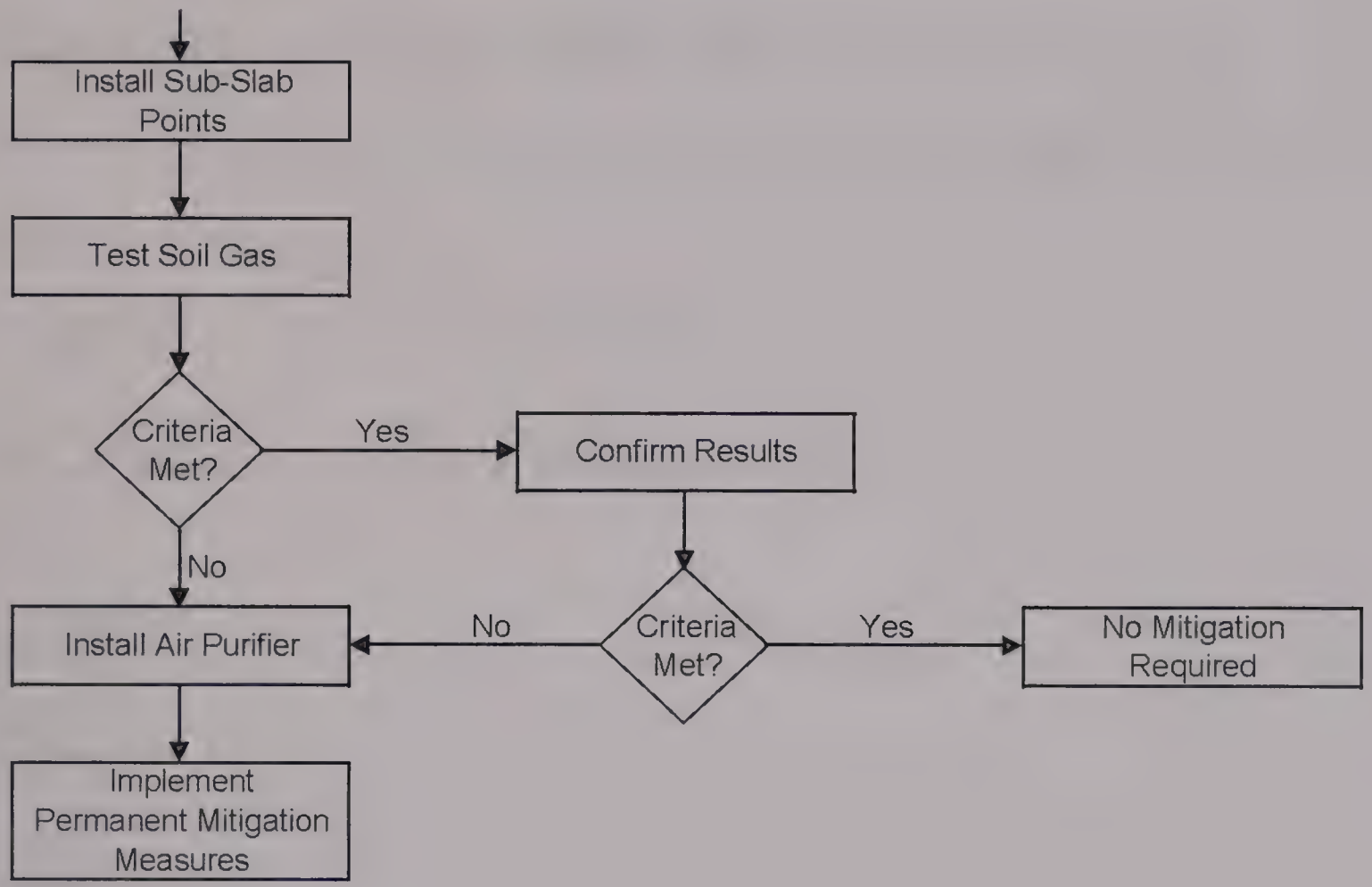
Evaluation Process (1 of 2)



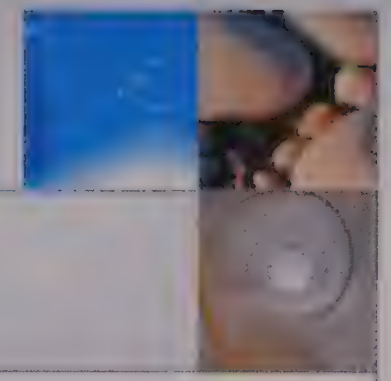
Evaluation Process (2 of 2)







Evaluation Process – Confirm Sub-Slab Results



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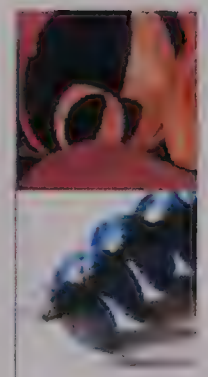

- Sample Sub-Slab Soil Gas
- Compare Results to Sub-Slab Soil Gas Criteria
  - < 10 µg/m^3 = no further action (confirmatory testing)
  - > 561 µg/m^3 = install SSDS
  - 10 to 561 µg/m^3 = indoor air testing
- Evaluate in Context with Related Data
  - Soil Gas
  - Groundwater
  - Indoor Air

Statistics for the Study Area

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- Residences and Buildings within Study Area: 71
- No Contact Information: 5
- Contacted: 66
  - Sub-Slab Sampled: 46
  - Sub-Slab Sampling to be Scheduled: 12
  - Previously Evaluated: 6
  - Refused Sampling: 2
- SSDS Recommended: 15
  - SSDS Agreed to: 7
  - SSDS Installed: 3
  - Refused SSDS: 5
- No Mitigation Required: 10

Residences and Buildings Evaluated

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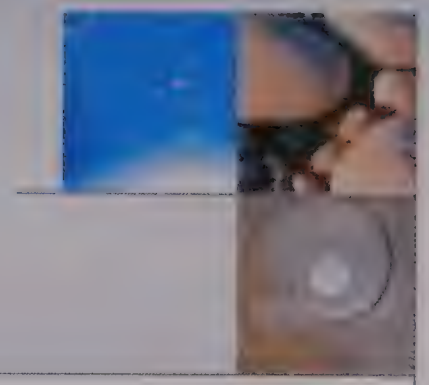
Capuano Early Childhood Center



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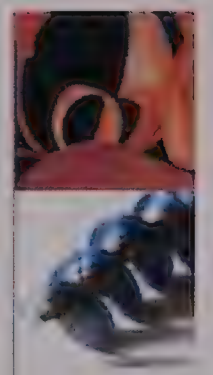
- Installed Sub-Slab Depressurization System
- Non-detects reported throughout Center from testing conducted on February 7, 2007
- Students began returning to previously affected classrooms February 26, 2007
- Monthly Sampling at Center
- March and April 2007 Results: non-detect
- System Modifications over the Summer

50 Tufts Street



- Building currently vacant but Somerville Two is preparing it for re-occupancy.
- UniFirst installed subslab depressurization system (SSDS) and soil vapor extraction (SVE) system beneath building.
- Collected gas treated before discharging.
- SVE cleans up contaminated soil beneath building.

Proposed Subsurface Investigation

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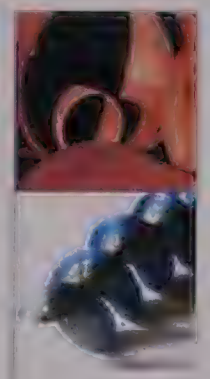
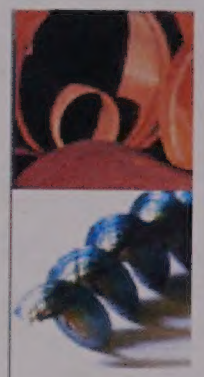
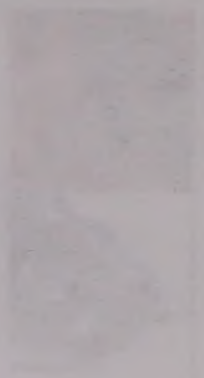


Next Steps



- Continue evaluation in study area
- Install SSDS as data indicate
- Continue monitoring SSDS at Capuano Center to confirm effectiveness of mitigation measures
- Modifications to SSDS at Capuano Center
- Evaluate expansion of SVE system at 50 Tufts Street to clean up soil outside the building footprint
- Continue to investigate and map subsurface contamination



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